REMARKS

Upon entry of the instant amendment, claims 1, 4-8 and 10-13 will remain pending in the present application.

In the instant amendment, claims 1 and 7 have been amended based on **Example 5** *(see, e.g., **Table 3** at page 16 of the specification (reproduced below from US 2006/0063457 A1)).*

TABLE 3

			Comparative Example	
		Example 5	7	8
1st Resin Component		PP	PP	PP
2nd Resin Component		HDPE	HDPE	HDPE
Spinneret Temperature (° C.)		250	250	250
Spinning Speed (m/min)		1360	760	390
Draw Ratio		0	2	4
Orientation Index (%)	1st Resin Component	60	68	95
	2nd Resin Component	16	50	64
Heat Shrinkage (%)*		-0.33	4.88	1.09
Melting Point (° C.)	1st Resin Component	160	160	165
	2nd Resin Component	127	129	130
Fusion Bond Strength (mN/tex)	140° C./30 s	32.9	38.2	37.0
	145° C./20 s	37.8	30.1	32.6
	145° C./30 s	33.8	37.0	33.5
	145° C./40 s	33.5	25.3	39.7

*Measured at a temperature higher than the melting point of the second resin component by 10° C.

Also, newly added claims 12-13 find support in the specification at page 5, line 15, **Example 5** (and in claims 1 and 7, respectively).

Thus, the instant amendment made herein to the claims does not incorporate new matter into the application as originally filed.

Accordingly, proper consideration of each of the pending claims is respectfully requested at present, as is entry of the present amendment.

Rejections Under 35 U.S.C. §§ 102(b) and 103(a)

Claims 1, 4, 6, 7, 8 and 11 stand rejected under 35 U.S.C. 102(b) as being anticipated by, in the alternative, under 35 U.S.C. 103(a) as being obvious over **Kajita JP '625** (JP-2003-119625) in view of J. Karger-Kocsis, "Polypropylene An A-Z reference" (hereinafter **the Karger reference**). Further, claims 5 and 10 stand rejected under 35 U.S.C. 103(a) as being obvious over **Kajita JP '625** (JP-2003-119625) in view of **the Karger reference** and **Horiuchi US '230** (US 5,800,230).

Applicants respectfully traverse and request that the Examiner withdraw the rejections based on the following considerations.

Legal Standard for Determining Anticipation

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art." *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Legal Standard for Determining Prima Facie Obviousness

M.P.E.P. § 2141 sets forth the guidelines in determining obviousness. First, the Examiner has to take into account the factual inquiries set forth in *Graham v. John Deere*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), which has provided the controlling framework for an obviousness analysis. The four *Graham* factors are:

(a) determining the scope and content of the prior art;

(b) ascertaining the differences between the prior art and the claims in issue;

(c) resolving the level of ordinary skill in the pertinent art; and

(d) evaluating any evidence of secondary considerations.

Graham v. John Deere, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966).

Second, the Examiner has to provide some rationale for determining obviousness. MPEP § 2143 sets forth some rationales that were established in the recent decision of *KSR International Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). Exemplary rationales that may support a conclusion of obviousness include:

(a) combining prior art elements according to known methods to yield predictable results;

(b) simple substitution of one known element for another to obtain predictable results;

(c) use of known technique to improve similar devices (methods, or products) in the same way;

(d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(e) "obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success

(f) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

(g) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

As the M.P.E.P. directs, all claim limitations must be considered in view of the cited prior art in order to establish a *prima facie* case of obviousness. *See* M.P.E.P. § 2143.03.

Distinctions and Nonobviousness over the Cited Art and the Combination thereof

The primary reference **Kajita JP '625** discloses the use of sheath-core conjugate fibers prepared by subjecting crimp treatment to undrawn fibers. **Kajita JP '625** also teaches that a carded web is prepared using the resultant fibers, and the carded web is heat-fused to thereby obtain the nonwoven fabric.

The significant difference between **Kajita JP '625** and the claimed invention is the behavior of the fibers against heat. Specifically, the fibers used in the claimed invention exhibit negative heat shrinkage upon heating *(which is called element "m" in the table at page 3 of the Office Action).* In other words, in the claimed invention, length of the fibers increases upon heating. An orientation index of the first resin component and the second resin component of the fibers are important in order to increase the fiber length upon heating. In this respect, claims 1 and 7 have been amended to further clarify the orientation index of the resin component establishes

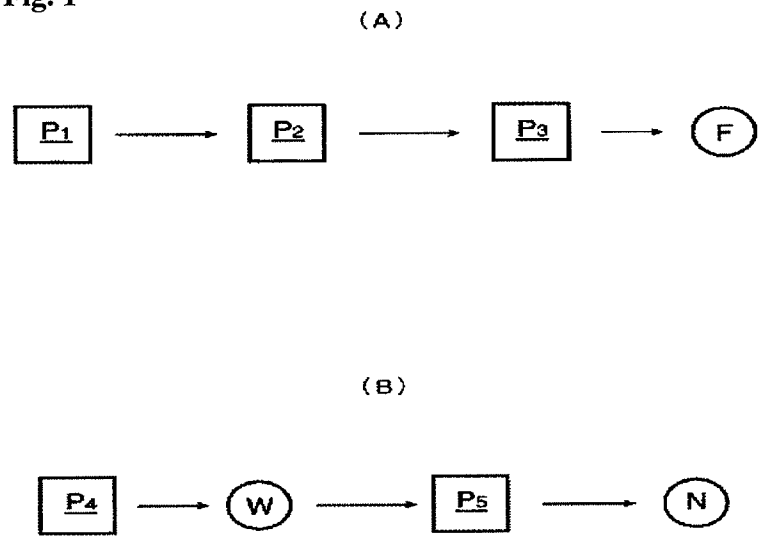
negative heat shrinkage, based on the working examples demonstrated in the present specification *(see, e.g.,* ***Table 3*** *at page 16 (reproduced above)).* The nonwoven fabric formed from the starting material of fibers which increase in length upon heating exhibits an advantageous property, that is the fibers increase in length upon heating the nonwoven fabric, and the increased length of the fibers contributes to bulkiness of the nonwoven fabric. In addition to higher bulkiness, the nonwoven fabric of the claimed invention has higher strength. *(See, e.g., page 11, lines 5 to 30 of the specification (reproduced below from paragraph of* ***[0036]*** *of US 2006/0063457 A1.))*

> **[0036]** The reasons for the higher strength are as follows. The characteristics of the conjugate fiber of the present invention consist in small thermal shrinkage and the small orientation index of the second resin component (i.e., the fusible component) as previously mentioned. That the conjugate fiber hardly shrinks when the carded web is heat treated means that the intersections of the fibers hardly move while bonded. It follows that the fusion bonds are prevented from reducing the bond strength. If the constituent fibers shrink, the intersections being fused move easily, resulting in a reduction in strength. The smaller orientation index of the fusible component allows for forming fusion bonds with high strength with a smaller quantity of heat than required conventionally. Because the influences of the heating temperature can be minimized, high strength fusion bonds can be formed in a wide range of from low to high temperatures. The resulting fusion bonds are stronger than those of the conjugate fibers made of the same materials but by an ordinary process. Additionally, the fusible component agglomerates uniformly in the fused points to form fusion bonds of almost regular shape. As a result, the fusion bonds show a reduced variation in strength. In short, the fusion bonds of the fibers making up the nonwoven fabric exhibit high strength with a small variation. In general, strength of a nonwoven fabric obtained by blowing hot air to join the fibers by fusion depends heavily on the strength of the fusion bonds. That is, in order to obtain a high-strength nonwoven

> fabric, it is necessary to maintain a high fusion bond strength level. Should the fusion bond strength varies widely from site to site, the nonwoven fabric fails to enjoy high strength, allowing destruction to start from a weak fusion bond. The use of the conjugate fibers of the present invention, which exhibit high strength at the fusion bonds with a small variation, results in production of a high-strength nonwoven fabric. Moreover, the fibers being less influenced by the heat treatment, the resulting nonwoven fabric exhibits uniform mechanical characteristics.

In contrast, the fibers as disclosed in **Kajita JP '625** exhibit positive heat shrinkage rate. In other words, the fibers shrink upon heating in **Kajita JP '625**. *(See e.g., **Fig. 1**, paragraphs **[0031]** to **[0037]** and **Table 1** (each reproduced below-with emphasis added)).* [1]

Fig. 1



[1] It is noted that paragraphs **[0031]** to **[0037]** are from a mechanical English translation available at Japanese Patent Office website. **Table 1** is translated into English using the terminologies as shown in the mechanical English translation.

*[0031]The process shown by numerals P1 of drawing 1 (A), The sheath which consists of copolymers, such as an ethylene-propylene random copolymer, other random copolymers, etc. of a low melting point, Melt spinning of the sheath-core type bicomponent fiber ** constituted is carried out to the core part which consists of AISOTA tic polypropylene of a high-melting point, and the "undrawn yarn formation process" which obtains an undrawn yarn until it gives and takes over convergence oils is expressed. The melt spinning in this process P1 can use the existing sheath-core type bicomponent fiber spinning equipment. The single yarn fineness by which melt spinning was carried out is 2 - 20dtex more preferably one to 30 dtex (deci textile).*

[0032]The process shown by numerals P2 of drawing 1 (A) expresses the crimp process of giving crimp to the undrawn yarn obtained by said undrawn yarn formation process P1. This crimp process P2 makes a tangle of textiles and textiles sufficient thing, carries out for the purpose of making sheet shaped Webb easy to form, and gives machinery crimp or natural crimp to linear shape textiles using crimper equipment of the existing stuffing-box type etc.

[0033]A number of crimp is 12-18 pieces/inch, and 8-20 percentage of crimp/inch is 12 to 18% more preferably 10 to 20%. In the carding machine as for which an opening sheet (web) changes a single fiber as it is percentage of crimp lower than this range, It is because there is a problem of productive efficiency falling that it is easy to produce faults, such as generating of waste cotton etc., and there are problems, such as becoming easy to generate formation spots, when a debt of textiles is too strong and manufactures a web with a carding machine when percentage of crimp is higher than this range.

[0034]The process shown by numerals P3 of drawing 1 (A) is a process which cuts the undrawn yarn by which crimp was carried out and is used as a staple fiber. This cutting process P3 is the process of making the single yarn by which crimp was carried out and giving oils, and performing the drying process in prescribed temperature, cutting into predetermined fiber length, and obtaining what is called staple fiber of short fiber shape.

[0035]By process P1 of a more than - P3, the textiles F for nonwoven fabrics concerning this invention can be manufactured. Since these textiles F for nonwoven fabrics are provided with a low melting point, low shrinkage nature, and the high amount of heat of fusion, they do not have sheath-core interfacial peeling by extension, and are preferred especially as a use of nonwoven fabric formation.

[0036]Next, drawing 1 (B) is a process flow figure which expresses simply the manufacturing process of the nonwoven fabric manufacturing method concerning this invention. First, numerals P4 shown in drawing 1 (B) is the process of making said textiles F for nonwoven fabrics distributing and depositing, and forming sheet shaped Webb W. For example, it lets the textiles F for nonwoven fabrics pass to the existing roller card machine etc., and Webb W of the uniform thickness of predetermined eyes according to the desired purpose is formed.

[0037]Numerals P5 shown in drawing 1 (B) is the heat-treatment process of carrying out hot wind weld of Webb W obtained from Webb formation process P4. This Webb formation process P4 is a process performed in order to combine Webb's W textiles so that it may not drop out. The hot wind weld (exhaust air through) device adjusted at the predetermined wind speed is selectively used for this process P5, and it supplies Webb W to this hot wind fusing equipment with a prescribed speed. And the hot wind weld nonwoven fabric N can be obtained predetermined time and by heat-treating by the hot wind of prescribed temperature.

Table 1

Measured Properties (Unit)	Example 1-1	Example 1-2	Comparative Example 1
Fineness (dtex)	3.7	3.7	3.7
Intensity (cN/dtex)	1.5	1.5	2.2
Ductility (%)	384.6	504.8	249.3
Number of crimp (per 25mm)	13.3	15.2	12.3
Percentage of crimp (%)	14.7	15.4	18.2
Fiber length (mm)	50	50	50
Single yarn heat shrinkage rate (%)	**0.6**	**0.5**	**2.6**

Thus, the nonwoven fabric formed from the starting material of fibers disclosed in **Kajita JP '625** does not increase the length of the fibers upon heating, and rather has a tendency to shrink. Even though bulky nonwoven fabric can be obtained according to the invention of **Kajita JP '625**, a nonwoven fabric with higher bulkiness and higher strength cannot be obtained by the invention of **Kajita JP '625**.

It is presumed that the fibers of **Kajita JP '625** do not have negative heat shrinkage because the orientation index of the resin component of the fibers of **Kajita JP '625** does not fall within the range of the claimed invention. That is, the orientation index of the resin component of the fibers of **Kajita JP '625** fails to meet the claim feature *"a second resin component having a lower melting or softening point than the melting point of the first resin component and an orientation index of 16% or lower"* (which is called element "**k**" in a table at page 3 of the Office Action). This failure is due to the difference in the production method of the fibers. More specifically, the fibers used in the claimed invention are produced by high-speed melt spinning, (which is called element "**g**" in the table at page 3 of the Office Action). For example, the high-speed melt spinning is referred to spinning with the take-up speed of 2000 m/min or higher *(see instant claim 10 and page 3, lines 10 to 22 of the specification (corresponding to paragraph [**0013**] of US 2006/0063457 A1 reproduced below).*

> **[0013]** The heat fusible conjugate fiber of the present invention is produced by high-speed melt spinning. High-speed melt spinning is carried out with a spinning apparatus shown in **FIG. 1**, which has two extrusion units **1** and **2** including extruders **1**A and **2**A and gear pumps **1**B and **2**B, respectively, and a spinning unit equipped with a spinneret **3**. Two resin components are separately melted and metered through the respective extruders **1**A and **2**A and the respective gear pumps **1**B and **2**B, joined together in the spinneret **3**, and ejected through nozzles. The design of the spinneret **3** is selected properly according to the configuration of a conjugate fiber to be produced. Right under the spinneret **3** is placed a winder **4**, whereby the molten resin ejected from the nozzles is taken up at a prescribed speed. The take-up speed in high-speed melt spinning is usually 2000 m/min or higher. There is no particular upper limit of the take-up speed. The latest melt spinning technology makes it feasible to take up fibers at a speed exceeding 10000 m/min.

In contrast, the fibers disclosed in **Kajita JP '625** are produced by spinning with the take-up speed of as low as 900m/min *(see paragraph [0039] of **Kajita JP '625** (reproduced below, based on the mechanical translation (emphasis added)).*

> ***[0039]***. *<Working example 1-1 (working example of textiles F for nonwoven fabrics concerning this invention)> MFR (value measured based on ASTM D (L)) is [the melting point] 135 ** in 20. The ethylene-propylene random copolymer (product name: Idemitsu polypropylene Y2043GP, product made from Idemitsu Petrochemistry) of 4.3% of ethylene content was used as low melting point polymer of a sheath component. On the other hand, MFR used polypropylene (product name: Idemitsu polypropylene Y2005GP, product made from Idemitsu Petrochemistry) of the high crystallinity type which is the melting point of 165 ** as high melting point polymer used as a core component by 20. The same mind sheath-core type bicomponent fiber spinning equipment provided with two 1 axis extrusion machines and the nozzle for bicomponent fibers with a hole diameter of 0.4 mm is used, Melt spinning was carried out adhering a spinning oil agent on condition of for 900-m/in the spinning temperature of 280 **, and taking over speed, and the area ratio of a sheath and a core part obtained the same mind sheath-core type bicomponent fiber in the state where single yarn fineness is 3.7dtex in 5:5 and where it does not extend. Subsequently, in [collect the multifilament which consists of this same mind sheath-core type bicomponent fiber, and] staple fiber trial production equipment, The 1st draw roller temperature was 30 **, the 2nd and 3rd draw roller temperature was 30 **, and the drawing bath did not heat but gave machinery crimp by the crimper, without making the 1st draw roller, the 2nd draw roller, and the 3rd draw roller into the speed, and applying draw magnification. Then, finishing oils were given, the drying process was performed at 80 **, the cutter device cut to 51 mm of fiber length, and single yarn fineness obtained the textiles for nonwoven fabrics which consist of staple fiber of 3.7dtex. The physical properties which consist of the fineness of the obtained single yarn, a number of crimp, percentage of crimp, and a single yarn heat shrinkage rate were measured. The measurement result was shown in Table 1. The intensity of single yarn and ductility, and a single yarn heat shrinkage rate were measured according to JIS L 1015.*

As for the fibers of **Kajita JP '625**, the production method is different from the method employed in the claimed invention. Then, because of the difference in the methods, the orientation index of the resin component of the fibers of **Kajita JP '625** is different from that of

the claimed invention. Further, the difference of the orientation index causes the heat shrinkage properties of **Kajita JP '625** to be different from that of the claimed invention. In short, the fibers employed in the claimed invention and the fibers disclosed in **Kajita JP '625** are completely different from each other. For example, the object of the invention of **Kajita JP '625** is to minimize the heat shrinkage of the fibers as much as possible, and to suppress shrinkage at the production of the nonwoven fabric as much as possible *(e.g., see paragraphs [0013] and [0023] of **Kajita JP '625** (reproduced below, based on the mechanical translation - with emphasis added))*. **Kajita JP '625** does not provide one skilled in the art with any motivation to arrive at the technical idea of making the nonwoven fabric bulky and improving the strength, by employing fibers which increase in length upon heating.

> *[0013]Next, textiles for nonwoven fabrics obtained by the above-mentioned means in this invention, Since a heat shrinkage rate is provided with the characteristic [it is few and] that excel in weld nature in a low temperature region, and adhesion strength is large, By carrying out hot wind weld (exhaust air through weld) processing of Webb formed of these textiles for nonwoven fabrics, a nonwoven fabric of new quality excellent in setting-proof [a loft, soft nature, and] nature and heat-sealing nature can be provided.*
>
> *[0023]A sheath-core type bicomponent fiber used for a nonwoven fabric concerning this invention, Originate in extension not being given at all and molecular orientation of a sheath component is controlled, There are few heat shrinkage rates, and since there was no rise of the melting point and it was proved [person / this invention] that it had the characteristic of excelling in weld nature in a low temperature region, it becomes possible to provide Webb suitable for hot wind weld (exhaust air through) processing. And if this Webb is used, a nonwoven fabric excellent in setting-proof [a loft, soft nature, and] nature and heat-sealing nature can be provided. The amount of heat of fusion of a sheath is also large, and practically sufficient nonwoven fabric strength can be obtained from sheath-core interfacial peeling not happening.*

As discussed above, **Kajita JP '625** neither discloses nor suggests the technical idea of making the heat shrinkage of the fibers negative, *etc.,* (elements "**g**," "**k**," and "**m**" as called in a table at page 3 of the Office Action). In addition, the remarkable advantages such as higher bulkiness and higher strength can be imparted by employing the claimed features (*e.g.,* the claimed fibers with negative shrinkage value). The advantageous properties cannot be expected from **Kajita JP '625**.

Similarly, the secondary references (*i.e.,* **the Karger reference** and **Horiuchi US '230)** also fail to disclose or suggest the claimed features, or the advantages that are achieved by the instant invention.

Therefore, the claimed invention is not anticipated by **Kajita JP '625**. Further, there is not provided any rationale and/or reasonable expectation of success based on the combination of the cited references, by which one skilled in the art could arrive at the present invention as claimed, since the cited references fail to disclose or suggest each of the instantly claimed features, as explained above. Further, the claimed invention exhibits unexpected, advantageous properties, as explained above. Thus, it is submitted that the present invention is not obvious over the cited art and the combination thereof.

Based on the foregoing considerations, Applicants respectfully request that the Examiner withdraw the outstanding rejections of record.

Provisional Examiner Interview Request

Should the instant reply not result in an allowance of each of pending claims 1, 4-8 and 10-13 currently under consideration, the Examiner is respectfully requested to contact Mr. John W. Bailey (Reg. No. 32,881) in the Washington D.C. area at 703-205-8031, in order to schedule

a personal interview at the Examiner's earliest convenience. It is submitted that such an interview would be valuable in helping to further prosecution of the instant application towards issuance of a Notice of Allowance, or alternatively, to further clarity and/or simplify outstanding issues for purposes of a future Appeal to the USPTO Board of Patent Appeals and Interferences.

CONCLUSION

Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of the pending claims 1, 4-8 and 10-13 are allowed.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey, Registration No. 32,881, at the telephone number of the undersigned below to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Director is hereby authorized in this, concurrent, and future replies to charge any fees required during the pendency of the above-identified application or credit any overpayment to Deposit Account No. 02-2448.

Dated: July 28, 2010

Respectfully submitted,

By _____

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